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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/621,553 | 07/21/2000 | Tatsuki Okamoto | 400782 | 4609 |

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| EXAMINER |
|---|
| HESSELTINE, RYAN J |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2623 | |

DATE MAILED: 06/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 09/621,553 | OKAMOTO ET AL. | |
| | Examiner | Art Unit | |
| | Ryan J Hesseltine | 2623 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *21 July 2000* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *21 July 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *4,6* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

## DETAILED ACTION

### *Double Patenting*

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims 1-3 and 6-9 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-7 of U.S. Patent No. 6,414,749 to Okamoto et al. Although the conflicting claims are not identical, they are not patentably distinct from each other because: claims 1-3 of the instant application are broader versions of claims 1 and 6 of the aforementioned patent, claims 6 and 7 of the instant application are broader versions of claim 7 of the patent, and claims 8 and 9 of the instant application are broader versions of claims 2-5 of the patent.

### *Claim Rejections - 35 USC § 102*

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-3 and 6-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Higuchi et al. (USPN 5,146,102), hereafter Higuchi.

5. Regarding claim 1, Higuchi discloses an irregular pattern (fingerprint) reader comprising: a prism (11) including a detection surface (top) on which a subject (finger) to be detected having and irregular pattern is put, and an incident plane (backside, light 13) having a first angle of inclination relative to said detection surface, said prism emitting emission light (front side to detector 16) reflected from said detection surface and corresponding to incident light incident upon said incident plane (figure 1; column 7, line 37-52); a first optical system (14, 15, 17a) including a light source (13), light from the light source (13) being incident on said incident plane of said prism and having an optical axis substantially parallel to said detection surface (figure 3); and a second optical system (17b) for transmitting the emission light emitted from said prism to an image pick-up device (column 10, line 39-44).

6. Regarding claim 2, Higuchi discloses that said emission light (right side) is emitted substantially parallel to said detection surface (element 11, figure 3; column 10, line 39-44).

7. Regarding claim 3, Higuchi discloses that said prism includes an emission plane having a second angle of inclination relative to said detection surface, and the emission light is emitted from said emission plane (right-side plane of prism 11 in figure 3).

8. Regarding claim 6, Higuchi discloses that said first optical system includes first incident light turning means (17a) for diverting the incident light from said light source (13) so the incident light is incident on said incident plane (left side of prism 11, figure 3).

9. Regarding claim 7, Higuchi discloses that said second optical system includes emission light turning means (17b) for diverting the emission light and forming and image on an image pick-up plane (16) of said image pick-up device (figure 3; column 10, line 39-44).

10. Regarding claim 8, Higuchi discloses that said second optical system includes lenses (15) of different magnifications in vertical and horizontal directions (enlargement or reduction; column 8, line 46-52), and said lenses (15) converge the emission light in one of the vertical and horizontal directions and form an image on said image pick-up plane (16) of said image pick-up device (column 7, line 26-36; column 10, line 43-44).

11. Regarding claim 9, Higuchi discloses that said prism includes luminous flux converging means (15) for converging the emission light on said detection surface (16, figure 3; column 7, line 26-36).

***Claim Rejections - 35 USC § 103***

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

13. Claims 4, 5, and 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Higuchi as applied to claim 2 above, and further in view of Metz et al. (USPN 5,974,162), hereafter Metz.

14. Regarding claim 4, Higuchi does not disclose that the emission light is emitted from said prism in a direction opposite to the incident light. Metz discloses a device for forming and detecting fingerprint images including a prism (light transmitting substrate 21 in figure 3, 12 in

figure 4) wherein emission light (25, figure 3; 15, figure 4) is emitted in a direction opposite to the incident light (from light source 20, figure 3; 10, figure 4; column 9, line 51-column 10, line 11). It would have been obvious to one of ordinary skill in the art at the time the invention was made to cause the emission light to be emitted from a prism in a direction opposite to the incident light as taught by Metz in order to provide a thin, ultra-compact device (column 4, line 17-19).

15. Regarding claim 5, Higuchi does not disclose that the prism includes a reflection surface having a third angle of inclination relative to said detection surface. Metz discloses that said prism has a third reflection surface (reflection-type volume hologram 23, figure 3; 13, figure 4) having a third angle (parallel) of inclination relative to said detection surface, and light from said detection surface diverted at said reflection surface is emitted (after being reflected again by the detection surface) from said prism as the emission light (25, figure 3; 15, figure 4; column 10, line 11-25 and line 42-56). It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize a prism having a reflection surface having a third angle of inclination relative to said detection surface as taught by Metz in order to make the device more compact while lengthening the optical path (column 4, line 17-19).

16. Regarding claim 10, Metz discloses that said prism includes a reflection surface for reflecting the light reflected from said detection surface (see above discussion of claim 5) and a lens portion (26, figure 3; 15, figure 4) for receiving light reflected from said reflection surface and directing the light to said second optical system, and an image pick-up plane (27, figure 3; 17, figure 4) of said image pick-up device is substantially parallel to said detection surface (figures 3 and 4; column 10, line 21-25 and line 51-56).

17. Regarding claim 11, Metz discloses that the light reflected from said detection surface is reflected from said incident plane, and emitted as the emission light (after reflecting again off said detection surface) through said reflection surface (note that the reflection surface 23 or 13 is disposed on the same plane as the incident plane; figures 3 and 4).

18. Regarding claim 12, neither Higuchi nor Metz disclose that the first angle is less than 45 degrees and more than an angle obtained by subtracting an angle of reflection at said detection surface from 90 degrees. Higuchi discloses that the prism has a sectional shape of a rectangular equilateral triangle meaning the first angle is 60 degrees, but it is clear that this limitation depends on the critical angle of the incident light on the prism and would be satisfied depending on the shape of the prism, which could be changed based on the specifications of the device. In order to make the system thinner, the prism thickness could be decreased, thereby decreasing the angles of both the incident plane and the emission plane with respect to the detection surface.

19. Claims 13-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Higuchi in view of Metz as applied to claim 10 above, and further in view of Hebert (USPN 5,596,454).

20. Regarding claim 13, neither Higuchi nor Metz disclose that a region through which a luminous flux in said prism does not pass is omitted from a plane of said prism facing said detection surface. Hebert discloses an uneven surface image transfer apparatus wherein an optical plate 64 is used as an imaging prism with many reflective surfaces of different angles. The device is designed to be as compact and light as possible and the optical plate is shaped such that is better fits into the device and room is made for other components (column 9, line 15-40). It would have been obvious to one of ordinary skill in the art at the time the invention was made to omit a region through which luminous flux in said prism does not pass from a plan of said

prism facing said detection surface as taught by Hebert in order to lessen the weight of the device or make the device more compact by making room for other components, e.g. the imaging device or the light source (figure 7 and 13).

21. Regarding claim 14, none of the cited references disclose the specific claimed dimensions of the detection surface having 20 mm in width, 15 mm in length, but it is well known that the receiving surface can be adjusted to the desired length and width depending on the amount of fingerprint (irregular pattern) information that is desired. Also, none of the references specifically disclose that said prism is not more than 10 mm in thickness from said detection surface to the image pick-up device, but it is a common goal to obtain a thickness as small as possible in a portable device as is evident in Metz, which strives to fit the device into a PCMCIA card for use in a portable computer or cellular telephone (column 10, line 57-65).

22. Regarding claim 15, Higuchi discloses that said first optical system including said light source (13) has a second collimator lens (14) and a second incident light turning means (17a) wherein incident light is incident upon said incident plane from said light source through said second incident light turning means and said second collimator lens (figure 3; column 10, line 39-54). Higuchi does not disclose that the second incident light turning means is located between said light source and said second collimator lens, but this is an obvious variation of Higuchi's invention and would not provide and unexpected result as is shown in Higuchi's suggestion that a composite optical element may be used by integrally forming a cylindrical lens with a prism serving as a transparent member in order to reduce the number of parts in the system (figure 4; column 10, line 48-54). Higuchi also does not disclose that said first optical system including said light source is located on an electronic substrate. Hebert discloses that

said light source (90) and the entire system are located on an electronic substrate (printed circuit board 66', figure 13; column 10, line 35-50). It would have been obvious to one of ordinary skill in the art at the time the invention was made to put said first optical system including said light source on an electronic substrate as taught by Hebert in order to make the system more compact, portable, and integrated into one complete system.

23. Regarding claim 16, none of the references explicitly show that said second incident light turning means includes a transparent block and an incident light emission plane of said second incident light turning means includes said second collimator lens. It is well known in the art to use a prism as a turning means (incident light illuminates a fingerprint which is *turned* and emitted from the prism as emitted light), and Higuchi shows that a prism and a lens can be integrally formed (figure 4; column 10, line 48-54). Hebert shows such an arrangement where the second collimator lens is embodied by aspherical illuminating lens 128 that is integrally formed as optical plate 64 (column 5, line 44-65).

24. Regarding claim 17, none of the cited references disclose that said second optical system is located on said image pick-up plane of said image pick-up device, but all the references disclose a lens and/or a light turning means located in close proximity to the image pick-up device, and integrating the systems on the same plane would serve only to make the device more compact. It would have been obvious to one of ordinary skill in the art at the time the invention was made to locate the second optical system on said image pick-up plane in order to make the device thinner and more compact and integrated.

25. Regarding claim 18, none of the references specifically disclose that said second incident light turning means is not more than 10 mm in thickness, but it is a common goal to obtain a

thickness as small as possible in a portable device as is evident in Metz, which strives to fit the device into a PCMCIA card for use in a portable computer or cellular telephone (column 10, line 57-65).

26. Regarding claim 19, Hebert discloses that said prism has a region through which a luminous flux in said prism does not pass omitted from a plane facing said detection surface (see above discussion of claim 13), said second optical system and said image pick-up device are respectively located on an electronic substrate (see above discussion of claims 15 and 17), and each of the elements mounted on said electronic substrate has a thickness of no more than 10 mm and a length of no more than 35 mm, and said detection surface of said prism is approximately 20 mm in width and approximately 15 mm in length (see above discussion of claims 14 and 18).

27. Regarding claim 20, Hebert discloses that said image pick-up device is mounted as a bare chip (element 204, figure 13) on one of said electronic substrate and said second optical system (see above discussion of claims 15 and 17).

***Conclusion***

28. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. USPN 4,414,684 to Blonder discloses a method and apparatus for performing a comparison of given patterns wherein the directions of the optical paths of incident and emission light are opposite. USPN 3,716,301 to Caulfield et al. discloses a fingerprint identification apparatus including incident and emission light beams that are parallel to the detection surface. USPN 5,493,621 to Matsumura discloses a fingerprint ID system and method wherein the optical path is bent in order to provide a compact device while increasing the optical path length. USPN

4,805,223 to Denyer discloses a skin-pattern recognition method and device wherein components are mounted on a common substrate in a compact device.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ryan J Hesseltine whose telephone number is 703-306-4069. The examiner can normally be reached on Monday - Friday, 8 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amelia Au can be reached on 703-308-6604. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9314 for regular communications and 703-872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-306-0377.

rjh
May 29, 2003

AMELIA M. AU
SUPERVISORY PATENT EXAMINER
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